Suisun Marsh Monitoring Program
Channel Water Salinity Report

Reporting Period: April 2005

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1. SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

As per SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions, the California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. Conditions of channel water salinity in the Suisun Marsh are determined by monitoring specific electrical conductivity. Specific electrical conductivity is referred to in the reports as "specific conductance". The locations of all listed stations are shown in Figure 5.

The monthly reports are submitted for October through May each year in accordance with SWRCB requirements. The reports are required to include salinity data from the stations listed below:

Station Identification	Station Name	General Location	Classification
C-2*	Collinsville	Western Delta	Compliance Station
S-64	National Steel	Eastern Suisun Marsh	Compliance Station
S-49	Beldon's Landing	North-Central Suisun Marsh	Compliance Station
S-42	Volanti	North-Western Suisun Marsh	Compliance Station
S-21	Sunrise	North-Western Suisun Marsh	Compliance Station

Data from the stations listed below are included in the monthly reports to provide information on salinity conditions in the western Suisun Marsh.

Station Identification	Station Name	General Location	Classification
S-97	Ibis	Western Suisun Marsh	Monitoring Station
S-35	Morrow Island	South-Western Suisun Marsh	Monitoring Station

Information on Delta outflow, area rainfall, and operation of the Suisun Marsh Salinity Control Gates are also included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

* Throughout the report, the representative data from nearby USBR station is used in lieu of data from station C-2.

2. Monitoring Results

2.1 Channel Water Salinity Compliance

During the month of April, 2005, salinity conditions at all five compliance stations are in compliance with channel water salinity standards of SWRCB (Table 1). Compliance with standards for the month of April was determined for each compliance station by comparing the progressive daily mean of high-tide specific conductance (SC) with respective standards. The standard for compliance stations C-2, S-64, S-49, S-42 and S-21 were 11.0 mS/cm during April 2005. Table 1 lists monthly mean high-tide SC at these compliance stations. The progressive daily mean (PDM) is the monthly average of both daily high-tide SC values. The mathematical equation is shown below.

$$\text{PDM} = \frac{\sum \text{daily average of high tide SC}}{\text{\# days of the month}}$$

2.2 Delta Outflow

Outflow started off high (e.g. above 50,000 cfs) in April as carry over result from April, and declined to about 30,000 cfs on April 8. Thereafter, outflow slightly increased to a high of about 32,000 cfs, then began to decrease on April 13 and continues to slowly decrease to about 20,000 cfs on April 27. At the end of April, as a result of two precipitation events, outflow leveled out to about 24,000 cfs. The monthly Delta outflow is represented by the mean Net Delta Outflow Index (NDOI). The NDOI is the estimated daily average of Delta outflow. Mean NDOI for April is listed below:

Month	Mean NDOI (cubic feet per second)
April	28,934

2.3 Rainfall

Total monthly rainfall at the Waterman Gauging Station in Fairfield during April 2005 was low and about four times less than the previous month. The largest precipitation occurred on April 9 with the daily total of 0.57 inches.

Month	Total Rainfall (inches)
April	1.43

2.4 Suisun Marsh Salinity Control Gate (SMSCG) Operations

Operations and flashboard/boat lock installations at the SMSCG during April 2005 is summarized below. The gates continued to be operated to control salinity with boat lock open configuration per NOAA request for the remainder of the control season.

Date	Gate status	Flashboards status	Boat Lock status
April 1-30	**Open**	Installed	Open

During April 2005, SMSCG operation continued to cease due to good water quality levels in the marsh and will resume as needed in the future to meet water quality concerns.

3. Discussion

3.1 Factors Affecting Channel Water Salinity in the Suisun Marsh

Factors that affect channel water salinity levels in the Suisun Marsh include:

- delta outflow;
- tidal exchange;
- rainfall and local creek inflow;
- managed wetland operations; and,
- operation of the SMSCG and flashboard configurations.

3.2 Observations and Trends

3.2.1 Conditions during the Reporting Period

During April 2005, salinity levels at Collinsville(C-2), National Steel(S-64), Beldons (S-49), Sunrise Club(S-21), and Volanti(S-42) were no higher than 3.0 mS/cm as shown in Figure 1. At the two monitoring stations, S-97 and S-35, salinity levels ranged between 3.0 mS/cm and 5.0 mS/cm as shown in Figure 2. Salinity levels at both eastern and western marsh stations were already low at the beginning of April due to high Delta outflow carry over accumulation from previous months. Due to continued good water quality conditions, gate operation continued to cease. Despite low amount of precipitation activity in April, salinity levels continued to remain very low throughout the marsh; salinity conditions were so fresh at all compliance stations that salinity level flattened out and does not go any lower because the peak amount of low salinity has been reached. At the monitoring stations, salinity levels merged and leveled out later in mid-April since the proximity of these stations are further west of the marsh.

Overall, salinity levels were well below standards at all compliance and monitoring stations.

3.2.2 Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for April 2005 were compared with means for those months during the previous nine years (Figure 4).

Means salinity pattern of all compliance and monitoring stations are similar to that of 2004, but lower in magnitude at stations S49, S42, and S21 and slightly higher in magnitude at S64. Compared to previous nine years, April 2005 salinity levels were ranked sixth in high Specific Conductance.

Table 1

Monthly Mean High Tide Specific Conductance at Suisun Marsh Water Quality Compliance Stations

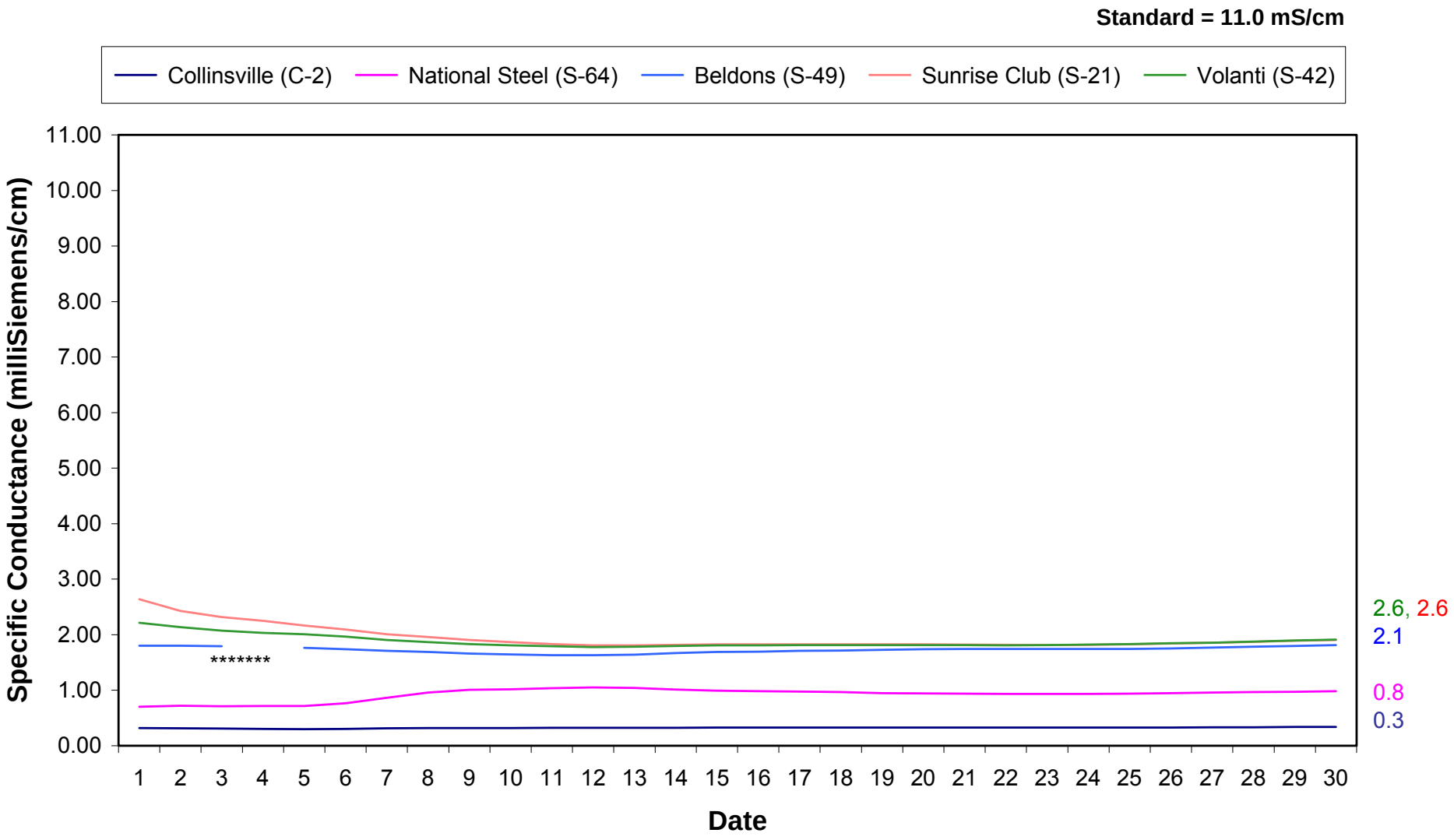
April 2005

Station	Specific Conductance (mS/cm)*	Standard	Standard meet?
C-2**	0.4	11.0	Yes
S-64	1.0	11.0	Yes
S-49	1.8	11.0	Yes
S-42	1.9	11.0	Yes
S-21	1.9	11.0	Yes

*milliSiemens per centimeter

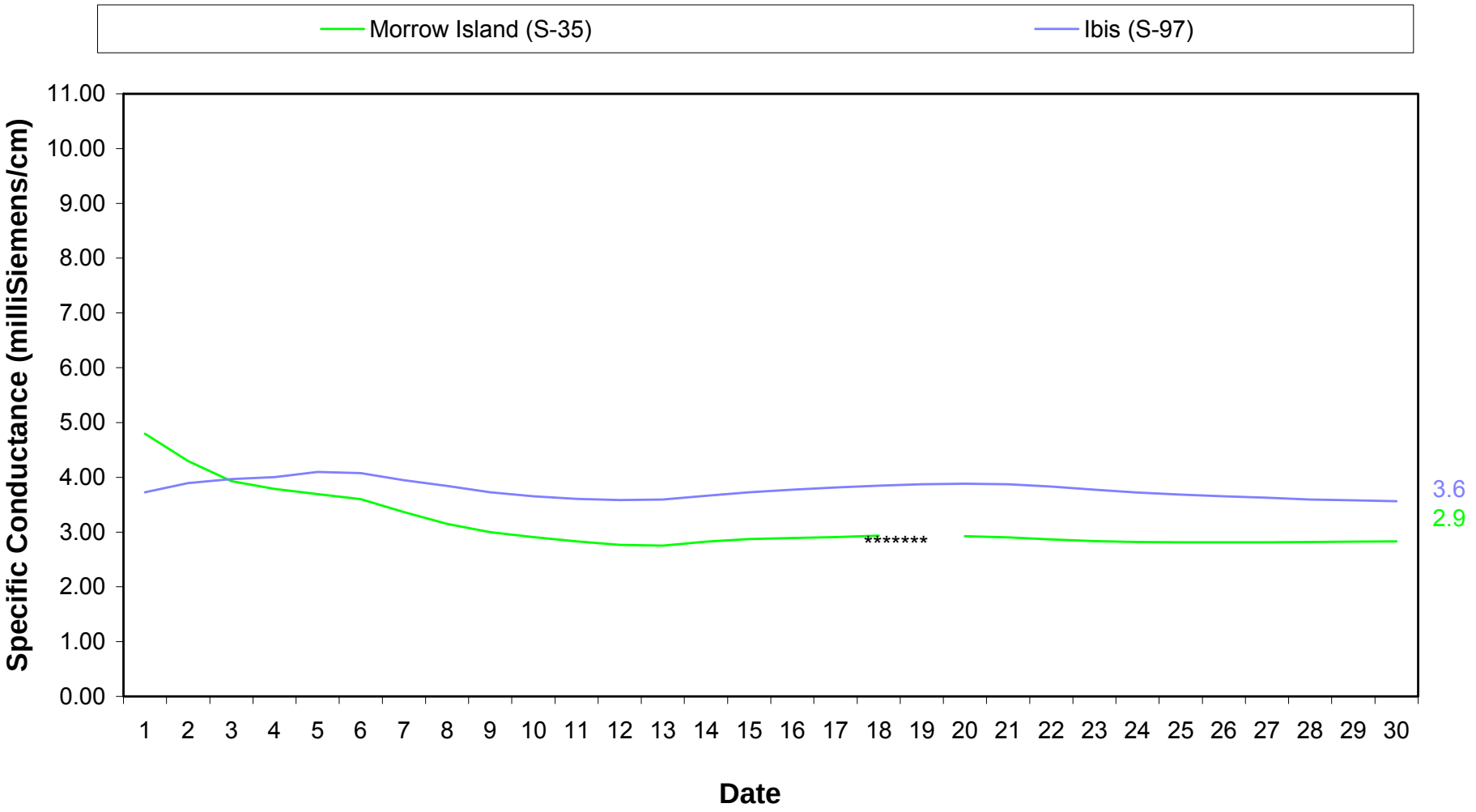
**The representative data from nearby USBR station is used in lieu of data from station C-2.

Figure 1. Suisun Marsh Progressive Mean High Tide Specific Conductance
April 2005



*******Missing data due to equipment

Figure 2. Suisun Marsh Progressive Mean High Tide Specific Conductance
April 2005



*******Missing data due to equipment

Figure 3. Daily Net Delta Outflow Index and Precipitation*
April 2005

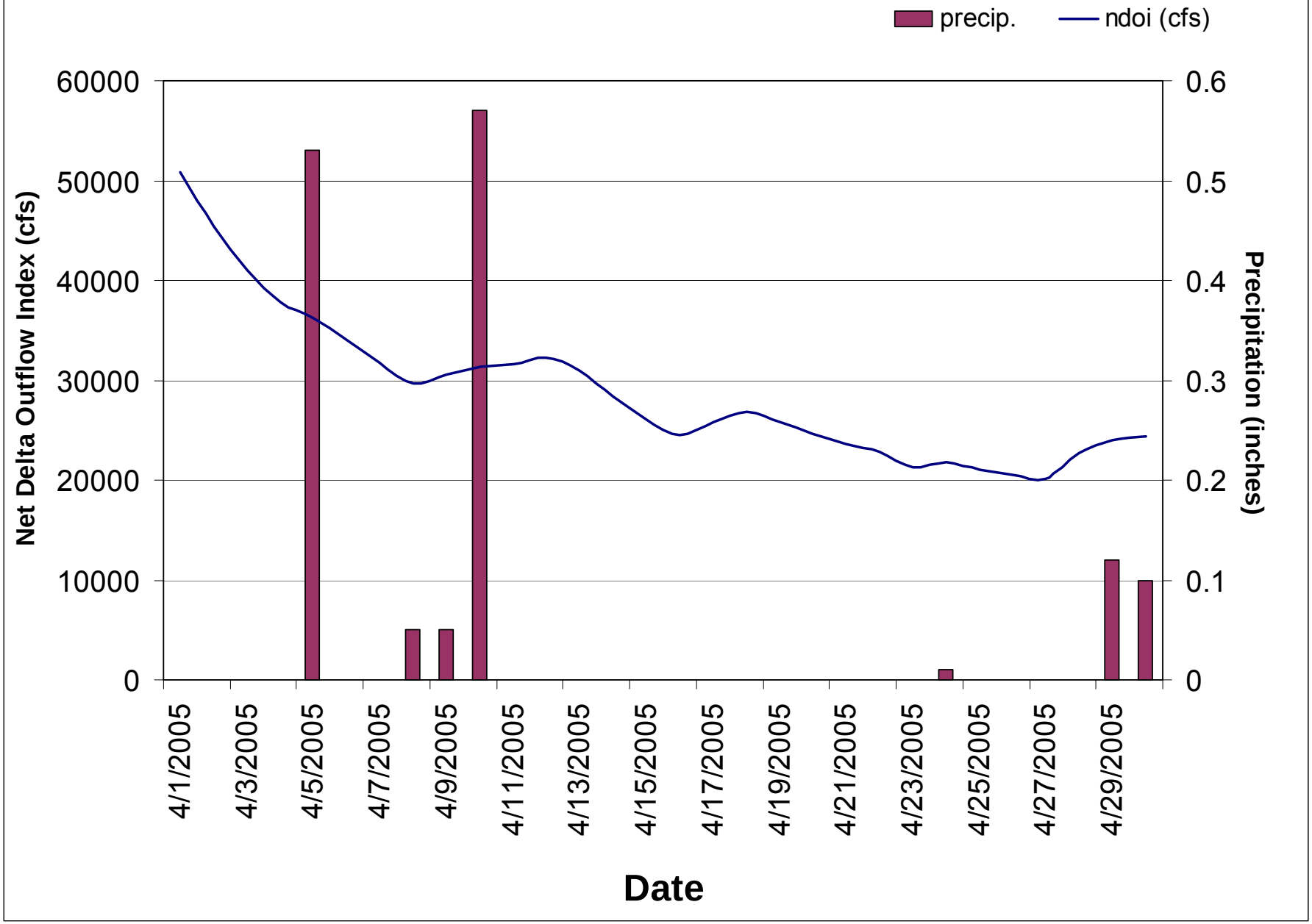
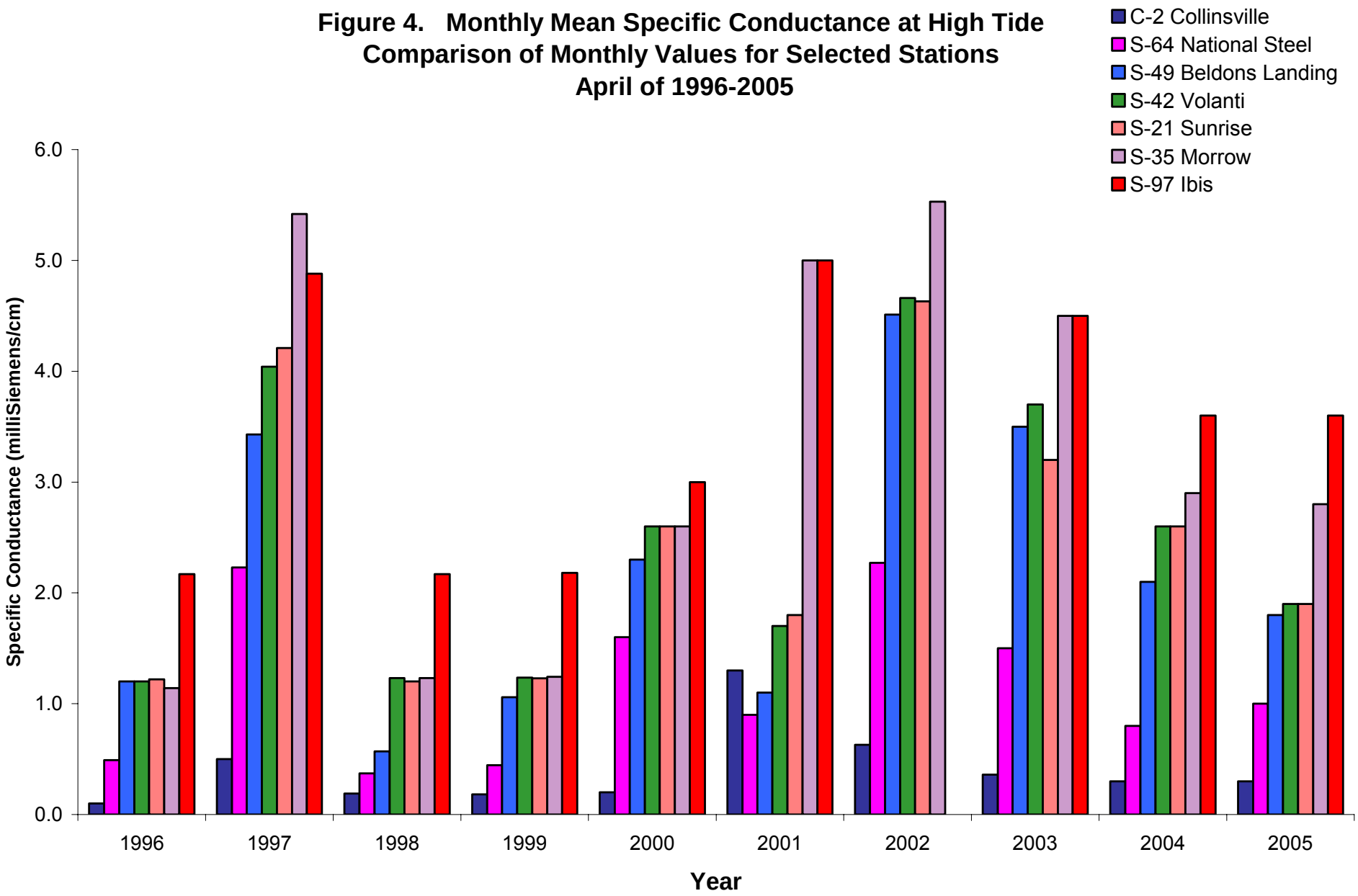
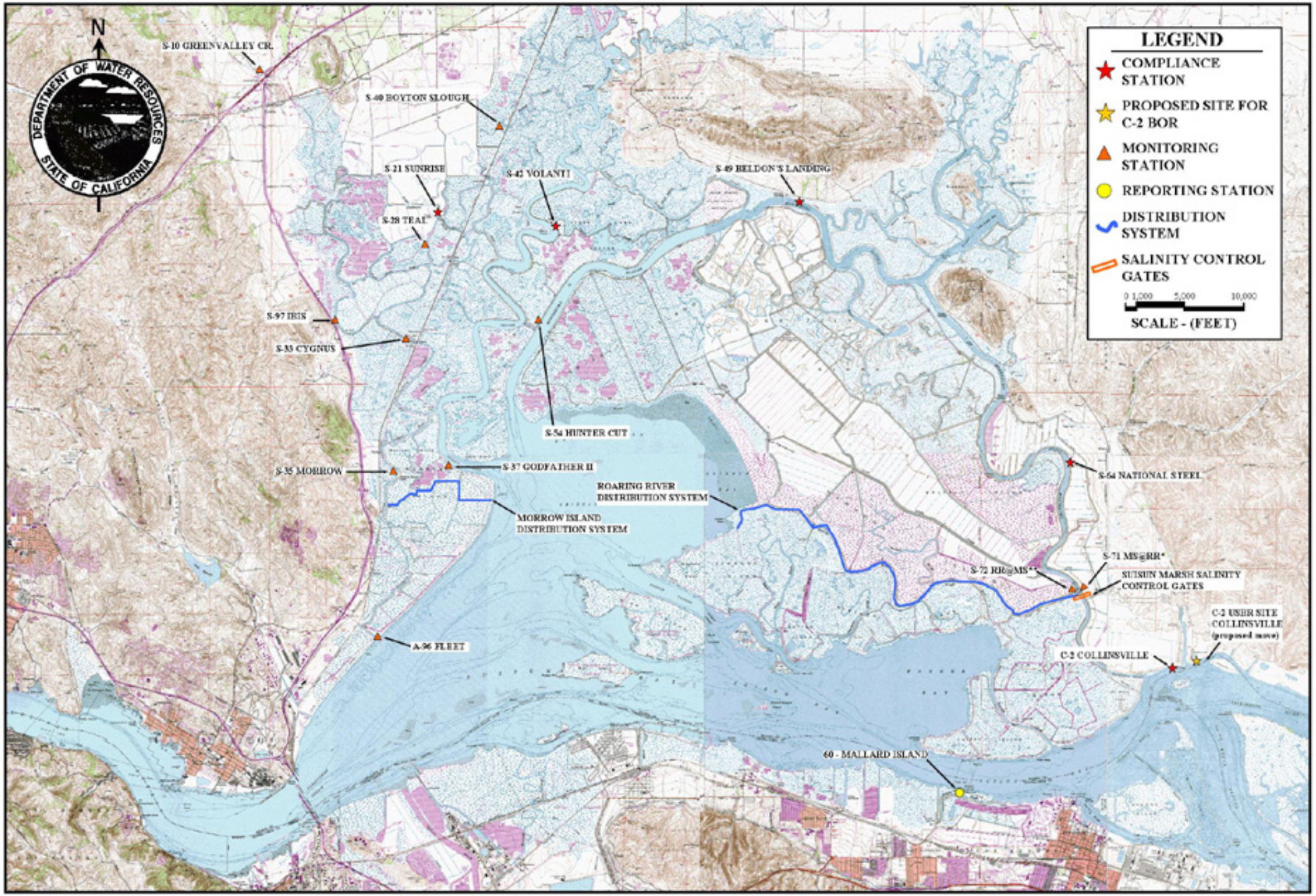


Figure 4. Monthly Mean Specific Conductance at High Tide
Comparison of Monthly Values for Selected Stations
April of 1996-2005





SUISUN MARSH PROGRAM WATER QUALITY MONITORING AND CONTROL FACILITIES